

# METHODS OF DNA MARKER-BASED GENETIC ANALYSIS USING ESTIMATED HAPLOTYPE FREQUENCIES AND USES THEREOF

## Abstract

5           The present invention is primarily drawn to methods of DNA marker-based genetic analysis  
using estimated haplotype frequencies to draw inferences about the relationship between haplotypes  
and traits or diseases. Unlike many haplotype analysis methods that require phase information that  
can be difficult to obtain from samples of non-haploid species, the instant methods are based on  
strategies for estimating haplotype frequencies from unphased diploid genotype data using the  
10       Estimation-Maximization (E-M) algorithm to overcome the missing phase information. These  
estimated haplotype frequencies can then be used in a variety of statistical analyses, including those  
to infer the existence of a disease gene. The process can include: 1) estimating haplotype  
frequencies; 2) computing test statistics; and 3) drawing inferences.

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